

The Influence Of Digital Culture And Digital Leadership On Innovation Capabilities With Digital Capabilities As A Mediation Variable

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ABSTRACT

Micro, Small, and Medium Enterprises (MSMEs) are productive business activities owned by individuals or business entities that meet certain criteria based on the amount of assets and annual turnover. MSMEs play a strategic role in the Indonesian economy because they absorb a large portion of the workforce and are the backbone of economic activity. This study aims to analyze the effect of digital culture, digital leadership, and innovation capabilities, with capabilities as a mediating variable. The sample size for this study was 200 respondents who were MSME actors. The method used was purposive sampling by distributing questionnaires online and offline. Data were analyzed using the SEM-PLS model through SmartPLS 4 software.

Keyword: Digital Culture, Digital Leadership, Digital Capabilities, Innovation Capabilities

INTRODUCTION

The development of MSMEs in Indonesia is currently very rapid. This is driven by government support, which encourages people to open micro, small, and medium enterprises. Several government policies, such as the implementation of a 0.5% Final Income Tax rate for MSMEs, will remain in effect until the end of 2025 for new businesses with an MSME Taxpayer Identification Number (NPWP), as an extension of the previous tax subsidy scheme. Furthermore, MSMEs with annual turnover below IDR 500 million are exempt from income tax and VAT, in accordance with the provisions of the HPP Law and the latest supervisory regulations. Another support provided by the government is a faster business permit process through the Online Single Submission (OSS) system, which is integrated with the national database, expediting MSME licensing. These factors have encouraged people to consider micro, small, and medium enterprises (MSMEs) as a source of income.

Micro, Small, and Medium Enterprises (MSMEs) are productive businesses owned by individuals or business entities that meet certain criteria based on total assets and annual turnover. MSMEs are divided into three categories: micro, small, and medium enterprises, distinguished by business scale, number of employees, and revenue. MSMEs play a crucial role in the economy by absorbing labor, driving innovation, and supporting local economic growth. The government supports MSMEs through various programs, such as training, financing, and market access, to improve competitiveness and business sustainability at the national and global levels.

MSMEs play a strategic role in the Indonesian economy because they employ a large portion of the workforce and serve as the backbone of economic activity. Along with economic development and global challenges, MSMEs have proven resilient, particularly during economic crises such as that of 1998 and the COVID-19 pandemic, where this sector has outperformed large businesses. MSMEs are also widely distributed, even in remote areas, making them a crucial instrument for equitable development and poverty alleviation. Therefore, the government continues to encourage MSME growth through financing policies, training, digitalization, and market access.

The development of MSMEs in Indonesia has indeed continued to increase. This is evident in data obtained from 2018 to 2023. In 2018, there were only 64.19 million units, while in 2023, there were 66 million business actors. This can be proven from the following image.

Table 1. MSME Data 2018-2023

Data UMKM 2018-2023						
Tahun	2018	2019	2020	2021	2022	2023
Jumlah UMKM (Juta)	64.19	65.47	64	65.46	65	66
Pertumbuhan (%)		1.98%	-2.24%	2.28%	-0,70%	1,52%

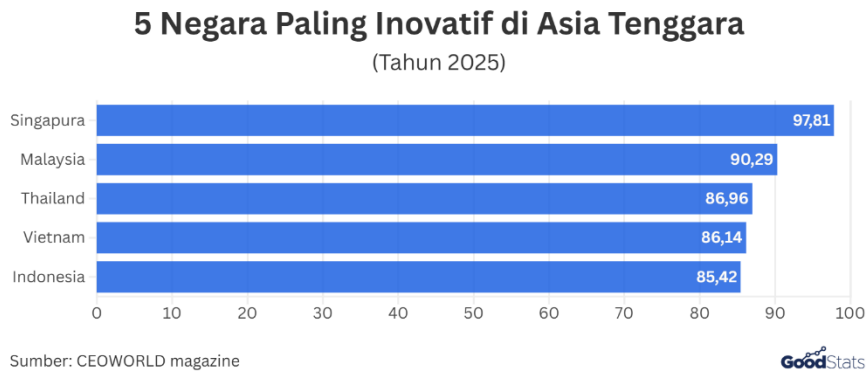
*Diolah dari berbagai sumber

Source: Indonesian Chamber of Commerce and Industry (2024)

The figure above demonstrates that the number of MSMEs in Indonesia has continued to increase from 2018 to 2023. This indicates that the number of MSMEs in Indonesia is continuing to grow. However, this increase must be balanced with the ongoing transformation of the digital era. Digital transformation is closely linked to a country's level of innovation. Indonesia's current level of innovation tends to be low, as evidenced by its Global Innovation Index (GII) ranking, which still needs improvement, reaching 61st place in 2023. This low level of innovation is due to various factors, including a small research and development

(R&D) budget (approximately 0.2% of GDP), limited R&D infrastructure, a low number of qualified human resources, and an underdeveloped innovation ecosystem to encourage the commercialization of research results.

Table 2. Innovation Levels in Southeast Asian Countries



Sumber: GoodStats (2025)

The figure above shows that Indonesia's innovation rate is currently very low, ranking fifth among Southeast Asian countries. Indonesia is the most populous country in Southeast Asia, with 11 countries currently in the region. While digital innovation in Indonesia continues to improve, particularly among MSMEs, this increase is not yet significant. This is indicated by the fact that only 30 million out of 66 million MSMEs in Indonesia have implemented digital innovation. This could be one of the reasons for the low performance of MSMEs in Indonesia. This data is evident in the graph below:

Figure 1. Number of MSMEs Entering the Digital Ecosystem in Indonesia



Source: Indonesian Chamber of Commerce and Industry (2025)

In 2025, Indonesia ranked 54th in the Global Innovation Index (GII). (mediakaltim, 2025). Despite being in the top 60, Indonesia's utilization of research and innovation results is still suboptimal. This ranking indicates that Indonesia has considerable innovation potential, but still needs improvement in the dissemination and utilization of research results. According to research conducted by Dinh and Minh (2025), several factors influence innovation capabilities, including digital capabilities, digital culture, and digital leadership.

Innovation capabilities are the capacity of individuals or organizations to create, develop, and implement new ideas that add value. This encompasses creative thinking, experimentation, risk management, and the courage to break away from conventional work practices. In an organizational context, innovation capabilities are crucial for adapting to

market changes, responding to customer needs, and creating a competitive advantage. These capabilities are not limited to products or services; they also encompass innovations in processes, strategies, and business models that support long-term growth.

Digital Capabilities are the abilities of individuals or organizations to effectively use digital technology to achieve specific goals. This encompasses technical skills, such as software usage, as well as critical thinking, digital communication, and data management. Digital capabilities also involve an understanding of cybersecurity, digital ethics, and adapting to technological change. In an organizational context, Digital Capabilities are the foundation for innovation, improving operational efficiency, and competing in the rapidly evolving digital marketplace.

Digital Capabilities and Innovation Capabilities are closely related and mutually supportive in the context of organizational transformation in the digital era. Digital Capabilities refer to the ability of individuals or organizations to effectively utilize digital technologies, such as data, digital tools, and information systems. This capability is a crucial foundation for creating a work environment that is adaptive to technological change and ready to face digital challenges. Meanwhile, Innovation Capabilities are the ability to generate and implement new ideas that have a positive impact, whether in the form of products, services, or processes. In practice, the ability to innovate is highly dependent on adequate digital support. Digital technology enables innovation processes to be faster, more collaborative, and more scalable. For example, the use of data analytics can help organizations identify new opportunities, while digital platforms accelerate experimentation and prototyping of ideas. In other words, Digital Capabilities strengthen an organization's innovation capacity through efficiency, information access, and work flexibility. Conversely, Innovation Capabilities encourage the development of more relevant and solution-oriented digital tools. The combination of the two is key for organizations to remain competitive, creative, and adaptive amidst ever-evolving technological disruption.

Digital culture is a new form of culture that has emerged with the rapid development of digital technologies, such as the internet, social media, and smart devices. In this culture, human activities such as communicating, working, learning, and creating are conducted digitally. Values, norms, and ways of interacting change with the dynamics of the virtual world. Digital culture reflects not only how technology is used but also how technology influences the behavior, identity, and mindset of modern society at large.

Digital culture and Innovation Capabilities are closely related in shaping an organization's competitiveness and ability to face challenges in the digital era. Digital culture reflects the values, mindsets, and habits that encourage the use of digital technology in an open, collaborative, and adaptive manner to change. This culture creates an environment that supports creativity, experimentation, and continuous learning—all essential elements of the innovation process. Innovation capabilities, the ability of an organization or individual to generate and implement new ideas effectively, are strongly influenced by the quality of their digital culture. In organizations with a strong digital culture, employees feel motivated to experiment with new technologies, share knowledge freely, and adopt innovative approaches to problem-solving. A culture that supports measured risk and failure as part of the learning process will accelerate innovation. Conversely, high innovation capabilities also strengthen digital culture because innovation often drives changes in work practices and organizational patterns. A more digital reaction. Thus, Digital Culture and Innovation Capabilities interact and reinforce each other, becoming a crucial foundation for driving sustainable organizational growth in the digital era.

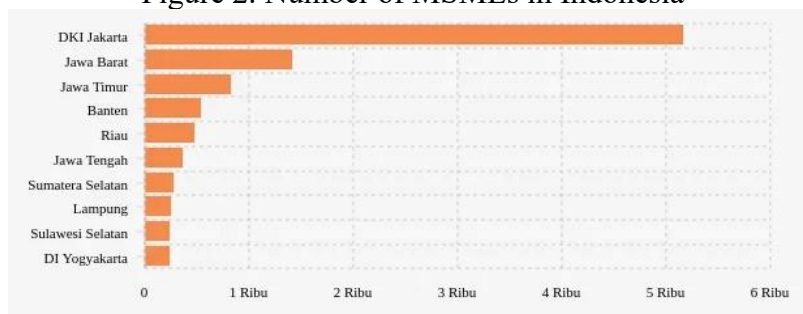
Digital Leadership is a leader's ability to utilize digital technology to direct, manage, and inspire an organization toward digital transformation. Digital leaders not only understand technological tools and systems but are also able to drive organizational culture change,

enhance digital collaboration, and create innovation. They play a role in shaping a technology-based strategic vision and ensuring that every team member has sufficient digital literacy to support shared goals in the rapidly evolving digital era.

Digital Leadership and Innovation Capabilities have a complementary relationship in driving successful digital transformation and sustainable organizational growth. Digital Leadership refers to a leader's ability to direct, manage, and inspire an organization through the use of digital technology. Digital leaders not only understand technology but are also able to create an innovative vision of the future and build a work culture that supports experimentation and change. Meanwhile, Innovation Capabilities are the capacity of an organization or individual to create, develop, and implement new ideas that generate added value. This capability relies heavily on leadership that fosters an environment open to creativity, risk-taking, and cross-functional collaboration.

Effective digital leaders will strengthen Innovation Capabilities by providing digital resources, establishing innovative strategies, and encouraging the use of technology to find new solutions. They are also able to build a digital ecosystem that encourages the involvement of all team members in the innovation process. Conversely, high Innovation Capabilities also support leaders in implementing their digital vision more dynamically and relevantly. Thus, these two concepts reinforce each other in creating competitive advantage in the digital era. This research will further focus on MSMEs in Jakarta. This is because Jakarta is the region with the largest number or population of MSMEs in Indonesia, as evidenced by the following figure:

Figure 2. Number of MSMEs in Indonesia



Source: Vika (2025)

Furthermore, of all MSMEs in Jakarta, researchers focused on MSMEs operating in the manufacturing sector, which have positive growth potential, as evidenced by the following figure:

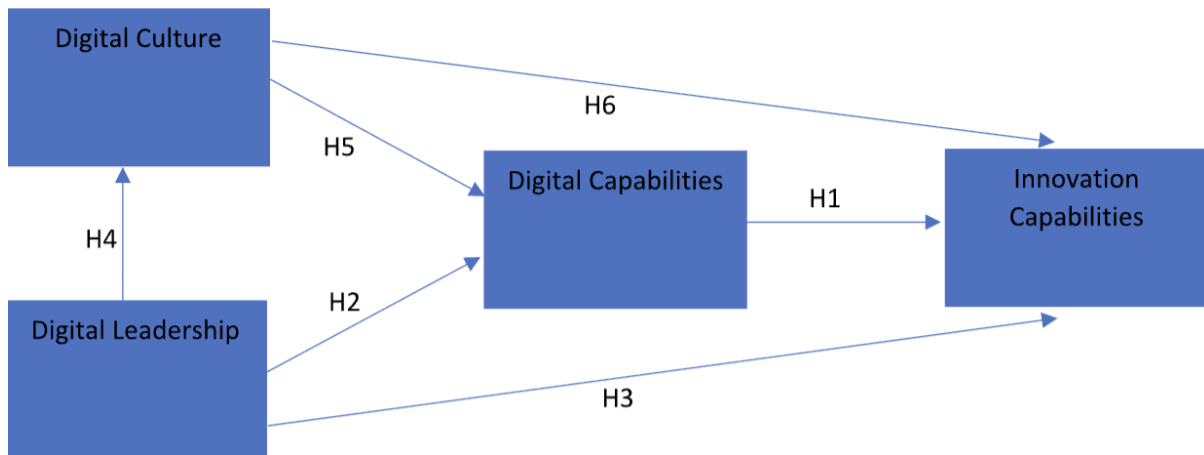
Figure 3. Development of the Manufacturing Industry in Indonesia 2011-2025



Source: Ahdiat (2025)

Framework

Figure 4. Framework



Source: SmartPLS 4

The hypothesis of this research is:

Digital Capabilities are the abilities of individuals and organizations to understand, manage, and effectively utilize digital technology to support various activities. These capabilities include digital literacy, software proficiency, data utilization, and adaptation to technological change. In the ever-evolving digital era, Digital Capabilities are a crucial foundation for fostering Innovation Capabilities, namely the ability to create and implement new ideas that add value to the organization. Digital Capabilities enable organizations to access information more quickly and accurately, which is a crucial ingredient in the innovation process. Through mastery of technologies such as big data, cloud computing, or artificial intelligence, organizations can identify market opportunities, respond to customer needs, and design innovative solutions more efficiently.

These capabilities also accelerate the process of experimentation and testing ideas, allowing innovation to be carried out with lower risk. Furthermore, Digital Capabilities support collaboration across teams and locations through digital platforms, accelerating the exchange of ideas and knowledge. Employees with strong digital capabilities tend to be more open to change and more active in seeking creative solutions. This creates a more dynamic and innovative work environment. With strong digital capabilities, organizations have greater flexibility in adapting business models, introducing new products, or improving internal processes. Innovation is no longer limited to specific functions but becomes part of the overall organizational culture. In conclusion, digital capabilities are a key driver in improving innovation capabilities. The higher the level of digital technology mastery, the greater the organization's potential for sustainable innovation amidst competition and rapid change.

Hypothesis

H1: Digital Capabilities Influence Innovation Capabilities

Digital Leadership plays a crucial role in developing and strengthening digital capabilities within an organization. Digital leadership refers to a leader's ability to leverage digital technology to effectively direct an organization's vision, strategy, and operations. Digital leaders not only understand technology but also create a culture that encourages widespread adoption and utilization of technology by all team members. One way digital leadership influences digital capabilities is through a clear and inspiring vision of the importance of digital transformation. Digital leaders are able to communicate the urgency of change, eliminate resistance to technology, and guide employees through the adaptation process. With the right guidance, leaders can encourage digital skills improvement, whether through training, providing technology resources, or creating a work environment that supports continuous learning. Furthermore, digital leadership plays a role in creating policies and strategies oriented towards improving digital capabilities. For example, by encouraging cross-

team collaboration using digital tools, integrating data into decision-making, or encouraging the use of technology to innovate work processes. Effective digital leaders also serve as role models in the use of technology, which indirectly encourages employees to follow suit and develop their own capabilities. When digital leadership is strong, organizations will be better prepared to face technological challenges, increase efficiency, and create added value through digital capabilities across all levels. Therefore, digital leadership not only directs digital strategy but also acts as a key catalyst in building sustainable and relevant digital capabilities in the era of digital transformation.

H2: Digital Leadership Influences Digital Capabilities

Digital leadership plays a crucial role in shaping and enhancing innovation capabilities within an organization. Digital leadership refers to a leader's ability to leverage digital technology to direct strategy, manage change, and create new value through an innovative and adaptive approach to technological developments. Leaders with a strong digital vision are able to create an environment that supports the exploration of new ideas, experimentation, and cross-functional collaboration. One way digital leadership influences innovation capabilities is by creating a work culture open to change and continuous learning. Digital leaders encourage employees to think creatively, take calculated risks, and try new approaches to problem-solving. This type of leadership fosters innovative ideas relevant to digital challenges and opportunities. Furthermore, digital leadership ensures that the organization has access to the latest technology and supports the development of employees' digital skills. By providing the right resources, training, and systems, leaders help teams acquire the skills necessary to make innovation a reality, not just an idea. Digital leaders also serve as a bridge between technology and business strategy, ensuring that every innovation developed aligns with the organization's long-term goals. They are able to integrate technology into work processes to drive efficiency, creativity, and competitive advantage. Thus, digital leadership is not only it not only provides direction and support, but also serves as a key catalyst in building innovation capabilities. Strong digital leadership enables organizations to continuously innovate, adapt quickly, and survive in a competitive and changing business environment. Therefore, the hypothesis for objective 3 is:

H3: Digital Leadership influences Innovation Capabilities

Digital leadership plays a crucial role in shaping and strengthening digital culture within an organization. Digital leadership is a leader's ability to strategically utilize digital technology to guide change, drive innovation, and build a work culture that adapts to technological developments. Digital culture, meanwhile, reflects collective values, attitudes, and behaviors that support the optimal use of technology in the workplace. Digital leaders serve not only as decision-makers but also as role models in the use of technology. They demonstrate how technology can be used to increase productivity, accelerate communication, and foster collaboration. This exemplary behavior indirectly shapes digital mindsets and behaviors within the organization. With leadership support, employees are more open to change, adapt more quickly, and are motivated to develop digital skills. Furthermore, digital leadership plays a role in creating policies and work systems that encourage technology adoption. For example, the implementation of digitally-based flexible work systems, the use of online collaboration platforms, and structured digital literacy training. Digital leaders also foster a culture that values innovation, continuous learning, and experimentation, which are essential elements in building a strong digital culture. By creating a clear vision and a supportive environment, digital leadership becomes a key foundation for building a digital culture. This relationship is reciprocal: effective digital leadership accelerates the growth of a digital culture, and a strong digital culture supports the success of a digital leadership strategy. Therefore, the role of leaders is crucial in ensuring a comprehensive and sustainable digital transformation. Therefore, the hypothesis for objective 3 is:

H4: Digital Leadership influences Digital culture

Digital culture plays a crucial role in shaping and enhancing digital capabilities within an organization. Digital culture refers to the values, attitudes, and habits that support the effective and sustainable use of digital technology. This culture creates a work environment that encourages openness to technology, digital-based collaboration, and learning focused on developing digital skills. When an organization has a strong digital culture, employees are more motivated to improve their digital capabilities. This is because a work environment that supports the active use of technology encourages individuals to learn, experiment, and adapt to various digital tools and platforms. For example, a culture open to innovation makes employees feel more comfortable trying new technologies without fear of failure. Furthermore, digital culture encourages broader knowledge exchange through digital platforms, such as online forums, collaboration apps, or internal social media. This interaction indirectly accelerates the development of digital capabilities as individuals learn from each other in a digital context. Organizations that cultivate a digital culture also tend to provide training, resources, and policies that support the development of digital competencies. Such a culture reinforces the recognition that digital capabilities are essential to individual and organizational success in the modern era. Thus, digital culture creates a conducive foundation for the growth of digital capabilities. A positive culture toward technology accelerates digital learning, increases technology adoption, and makes digital skills a part of everyday work. In the long term, this will strengthen organizational competitiveness and accelerate overall digital transformation.

Therefore the hypothesis for objective 5 is:

H5: Digital culture influences digital capabilities

Digital culture plays a crucial role in encouraging and strengthening innovation capabilities within an organization. Digital culture reflects values, mindsets, and behaviors that support the active and open use of digital technology and encourage adaptation to change. This culture creates a flexible, collaborative, and innovative work environment—factors essential for enhancing innovation capabilities. In organizations with a strong digital culture, employees are encouraged to think creatively, try new approaches, and be unafraid of failure. A culture that values experimentation and learning from mistakes increases individuals' courage to put forward new ideas. Furthermore, a digital culture encourages the use of technology as a tool to find solutions, improve work processes, or create products and services that are more relevant to market needs. Digital culture also accelerates information exchange and cross-functional collaboration through digital platforms. This allows innovative ideas to emerge from various levels of the organization and develop through dynamic teamwork. When all parts of the organization are accustomed to working digitally, the innovation process becomes more efficient and integrated. Furthermore, a strong digital culture is usually accompanied by support for digital skills development and access to the latest technology. This strengthens the capacity of individuals and teams to develop and implement new ideas with adequate digital support. Thus, digital culture directly impacts innovation capabilities by creating a work climate that supports creativity, collaboration, and the use of technology. Organizations with a mature digital culture will be better prepared to face challenges, create new breakthroughs, and adapt to a constantly changing business environment.

H6: Digital Culture influences Innovation Capabilities

Digital culture plays a crucial role in encouraging and strengthening innovation capabilities within an organization. Digital culture reflects values, mindsets, and behaviors that support the active and open use of digital technology and encourage adaptation to change. This culture creates a flexible, collaborative, and innovative work environment—factors essential for enhancing innovation capabilities. In organizations with a strong digital culture,

employees are encouraged to think creatively, try new approaches, and be unafraid of failure. A culture that values experimentation and learning from mistakes will increase individuals' courage to put forward new ideas. Furthermore, a digital culture encourages the use of technology as a tool to find solutions, improve work processes, or create products and services that are more relevant to market needs. Thus, digital culture directly influences innovation capabilities by creating a work climate that supports creativity, collaboration, and the use of technology. Organizations with a mature digital culture will be better prepared to face challenges, create new breakthroughs, and adapt to a constantly changing business environment.

METHOD

This type of research is quantitative descriptive, using a statistical approach to the research data. The aim is to examine the influence of digital culture and digital leadership on digital capabilities and their impact on the innovation capabilities of micro, small, and medium-sized food enterprises in Jakarta. The population of this study was MSMEs in Jakarta, with the criteria for MSMEs being determined based on Law No. 20 of 2008. The sampling technique used purposive sampling, which uses random sampling but is accompanied by certain criteria. The most important criteria are: an understanding of the company's financial system and digital innovation. The study used a rule of thumb of 10 multiplied by the number of indicators, resulting in an estimated 20 indicators, resulting in a minimum sample size of 200 MSME food owners across Jakarta.

In this study, the data analysis used the Partial Least Squares (PLS) approach. PLS is a component- or variance-based Structural Equation Modeling (SEM) model. According to Ghozali (2016), PLS is an alternative approach that shifts from a covariance-based SEM approach to a variance-based SEM approach. Covariance-based SEM generally tests causality/theory, while PLS is more of a predictive model. PLS is a powerful analytical method (Ghozali, 2016) because it is not based on many assumptions. For example, data must be normally distributed, and samples do not need to be large. In addition to confirming theories, PLS can also be used to explain the existence or absence of relationships between latent variables. PLS can simultaneously analyze constructs formed with reflective and formative indicators.

Sample

The population of this study was MSMEs in Jakarta, with the criteria for MSMEs being determined based on Law No. 20 of 2008. The sampling technique used was judgmental sampling. Judgmental sampling is a non-probability sampling technique in which researchers deliberately select participants based on their knowledge, expertise, and professional judgment to obtain a representative sample for specific research purposes, rather than using random selection methods. The primary assessment criteria were: an understanding of the company's financial system and digital innovation. The study used a rule of thumb of 10 multiplied by the number of indicators, resulting in an estimated 20 indicators, resulting in a minimum sample size of 200 MSME food owners across Jakarta.

Data Collection

1. Digital culture

Digital culture is positioned as an independent variable measured based on research by Dinh and Minh (2025). The digital culture variable is measured using several indicators summarized in the following table:

Table 3. Digital Culture Indicator

Variable	Indicator	Scale
<i>Digital culture</i>	1. Discuss failures with the team	Likert (1-5)
	2. Discussions are based on input from team members	

	3. Work with a cross-functional team system	
	4. Avoiding too strong a hierarchy	
	5. Each team contributes ideas in the discussion	

2. Digital Leadership

Digital Leadership is positioned as the second independent variable measured based on research by Van Dinh and Minh (2024). The financial literacy variable is measured using several indicators summarized in the following table:

Table 4. Digital Leadership Indicator

Variable	Indicator	Scale
<i>Digital Leadership</i>	1. Raise awareness of the risks of digital technology	Likert (1-5)
	2. Raise awareness of the importance of digital technology	
	3. Demonstrate ethical use of digital technology	
	4. Provide information to avoid doubts about using digital technology	
	5. Provide experience using digital technology	
	6. Guide how to use digital technology	

3. Digital Capabilities

Digital Capabilities are positioned as a mediating variable, measured based on research by Van Dinh and Minh (2024). The Digital Capabilities variable is measured using several indicators summarized in the following table:

Table 5. Digital Capabilities Indicator

Variable	Indicator	Scale
Digital Capability	1. Obtaining important digital information	Likert (1-5)
	2. Identifying opportunities related to digital technology	
	3. Embracing digital transformation	
	4. Understanding the latest digital technologies	
	5. Developing technology in operational activities	

4. Innovation Capabilities

Innovation Capabilities are positioned as the dependent variable, measured based on research by Van Dinh and Minh (2024). The Digital Capabilities variable is measured using several indicators summarized in the following table:

Table 6. Innovation Capabilities Indicator

Variabel	Indikator	Skala
Innovation Capability	1. Always develop the latest products	Likert (1-5)
	2. Always update and innovate operational processes	
	3. Always develop marketing systems using digital methods	
	4. Always implement development and innovation in team implementation	

Data Analysis Techniques

In this study, the data analysis used the Partial Least Squares (PLS) approach. PLS is a component- or variance-based Structural Equation Modeling (SEM) model. According to Ghazali (2016), PLS is an alternative approach that shifts from covariance-based SEM to variance-based SEM. Covariance-based SEM generally tests causality/theory, while PLS is more of a predictive model. PLS is a powerful analytical method (Ghozali, 2016) because it is not based on many assumptions. For example, data must be normally distributed, and samples do not need to be large. In addition to confirming theories, PLS can also be used to explain the existence or absence of relationships between latent variables. PLS can simultaneously analyze constructs formed with reflective and formative indicators.

Parameter estimates obtained with PLS can be categorized into three categories. First, the weight estimate used to create latent variable scores. Second, it reflects the path estimate connecting the latent variables and between the latent variables and their indicators (loadings). Third, it relates to the means and parameter locations (regression constant values) for indicators and latent variables. To obtain these three estimates, PLS uses a three-stage

iteration process, with each iteration producing estimates. The first stage produces weight estimates, the second stage produces estimates for the inner and outer models, and the third stage produces estimates for means and locations (Ghozali, 2016).

Data analysis in this study will focus on hypothesis testing. According to Sugiyono (2019), hypothesis testing is the examination of temporary answers to research problem formulations. Therefore, research problem formulations are usually structured as questions. These are considered temporary because theoretical answers to research problem formulations have not yet been empirically answered. The steps in testing this hypothesis begin with establishing the null hypothesis (H_0) and alternative hypothesis (H_a), selecting and calculating statistical tests, establishing significance levels, and establishing testing criteria.

Variable Operation

The variables in this study are: (1) The dependent variable is MSME performance. (2) The independent variables include financial literacy and digital innovation. The operationalization of the variables is as follows:

1. Digital Culture

Digital culture is positioned as an independent variable, measured based on research by Dinh and Minh (2025). The digital culture variable is measured through several indicators summarized in the following table:

Digital Leadership

2. Digital Leadership is positioned as the second independent variable, measured based on research by Van Dinh and Minh (2024). The financial literacy variable is measured through several indicators summarized in the following table:

3. Digital Capabilities

Digital Capabilities is positioned as a mediating variable, measured based on research by Van Dinh and Minh (2024). The digital capabilities variable is measured through several indicators summarized in the following table:

4. Innovation Capabilities

Innovation Capabilities is positioned as a dependent variable, measured based on research by Van Dinh and Minh (2024). The digital capabilities variable is measured through several indicators summarized in the following table:

RESULT

Validity Analysis

Convergent validity analysis and discriminant validity analysis are two forms of validity analysis used in this study. Testing the Average Variance Extracted (AVE) and outer loading values are components of the convergent validity analysis.

Convergent Validity

1) Average Variance Extracted (AVE)

The Average Variance Extracted (AVE) in this study aims to test the level of common variance in the latent variable indicators. A valid AVE value is >0.5 . The results of the AVE are displayed in Table 7.

Table 7. AVE Test Result

Variable	Average Variance Extracted
Digital Culture	0.548
Digital Leadership	0.602
Digital Capabilities	0.598
Innovation Capabilities	0.623

Source: SmartPLS 4

2) Outer Loading

This study also used outer loading to test the validity of the study. A valid outer loading value is >0.7 . The results of the outer loading are displayed in Table 8.

Table 8. Outer Loadings Test Result

Digital Culture		Digital Leadership		Digital Capabilities		Innovation Capabilities	
DC1	0.307	DL1	0.743	Dcap1	0.737	IC1	0.783
DC2	0.867	DL2	0.706	Dcap2	0.75	IC2	0.799
DC3	0.769	DL3	0.833	Dcap3	0.776	IC3	0.763
DC4	0.828	DL4	0.797	Dcap4	0.814	IC4	0.81
DC5	0.785	DL5	0.824	Dcap5	0.788		
		DL6	0.744				

Source: SmartPLS 4

Discriminant Validity

1) Fornell Larcker

In discriminant validity testing, there are two tests: the Fornell-Larcker criterion and the cross-loading test. The Fornell-Larcker test is considered valid if the squared variance of each variable is greater than the correlation between the variables. The results of the Fornell-Larcker test are shown in Table 9.

Table 9. Fornell Larcker Test Result

	DC	DCap	DL	IC
DC	0.740			
DCap	0.636	0.773		
DL	0.708	0.751	0.776	
IC	0.671	0.734	0.755	0.789

Source: SmartPLS 4

2) Cross Loading

Based on the cross-loading test, as shown in Table 10, all variables and their indicators tend to have higher values than the other variables. This value indicates the strong correlation between the indicator and its factor. The higher the value, the stronger the relationship between the indicator and its factor. These results meet the requirements for discriminant validity testing.

Tabel 10. Cross Loadings Test Result

	DC	DCap	DL	IC
CAP1	0.482	0.737	0.474	0.450
CAP2	0.418	0.750	0.543	0.567
CAP3	0.510	0.776	0.660	0.611
CAP4	0.503	0.814	0.606	0.638
CAP5	0.543	0.788	0.599	0.549
CUL1	0.307	0.068	0.062	0.045
CUL2	0.867	0.525	0.631	0.570

CUL3	0.769	0.463	0.496	0.475
CUL4	0.828	0.506	0.557	0.535
CUL5	0.785	0.576	0.617	0.603
INN1	0.591	0.572	0.639	0.783
INN2	0.480	0.608	0.542	0.799
INN3	0.428	0.535	0.493	0.763
INN4	0.595	0.598	0.684	0.810
LEAD1	0.438	0.472	0.743	0.515
LEAD2	0.536	0.609	0.706	0.668
LEAD3	0.572	0.618	0.833	0.618
LEAD4	0.575	0.611	0.797	0.582
LEAD5	0.597	0.617	0.824	0.596
LEAD6	0.554	0.543	0.744	0.511

Source: SmartPLS 4

2. Reliability Analysis

The results of the Cronbach's Alpha test in this study did not find a value <0.7 for all variables and the composite reliability value was also not found to be <0.7 . It can be concluded that the results of the Cronbach's Alpha and Composite Reliability tests prove that the level of reliability tends to be stable and consistent, and can be trusted to be considered in further research.

Table 11. Reliability Test Result

	Cronbach's Alpha	rho_A	Composite Reliability
DC	0.783	0.841	0.848
DL	0.867	0.870	0.900
DCap	0.832	0.837	0.881
IC	0.799	0.804	0.868

Source: SmartPLS 4

Data Analysis Result

1. Coefficients of Determinations

Based on the Coefficient of Determination (R^2) test shown in Table 4.13, the R^2 value for the construct of the digital capabilities variable is 0.586. This indicates that 58.6% of the variability in (digital capabilities) can be influenced by independent variables. In other words, this model has high predictive power and can be relied upon to explain the factors that influence digital capabilities in respondents. The remaining 41.4% is explained by other factors outside the model or may come from variables not included in this study. In addition, based on the Coefficient of Determination (R^2) test also shown in Table 12, the R^2 value for the construct of the innovation capabilities variable is 0.654. This indicates that 65.4% of the variability in (innovation capabilities) can be influenced by mediating and independent variables. In other words, this model has high predictive power and can be relied upon to explain the factors that influence innovation capabilities in respondents. The remainder, namely 34.6%, is explained by other factors outside the model or may come from variables not included in this study.

Table 12. Coefficients Determination Test Result

	R Square
DCap	0.586

IC	0.654
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Source: SmartPLS 4

2. Effect Size

Table 13 shows the results of the Effect Size (f^2) test of the influence of the two independent variables on digital capabilities. The test results show that digital leadership has the largest influence, with an f^2 value of 0.439, which is classified as a large influence. This indicates that superiors' ability to educate on digital aspects within the company has a strong influence on the company's digital capabilities.

Furthermore, digital leadership has an f^2 value of 1.003 for digital culture, which is in the high influence category. This indicates that a higher leader's ability to educate on digital aspects will influence the company's culture. Digital leadership also has an f^2 value of 0.130 for innovation capabilities, which is in the low influence category. This indicates that a higher leader's ability to educate on digital aspects will influence the company's innovation capabilities.

Digital culture has an f^2 value of 0.056 for innovation capabilities, which is in the low influence category. This indicates that a higher digital culture will influence the company's innovation capabilities. Finally, digital capabilities has an f^2 value of 0.134 for innovation capabilities, which is in the medium influence category. This indicates that the higher the digital capability, the more it will affect the innovation capability in the company..

Table 13. Effect Size Test Result

	DC	DCap	DL	IC
DC		0.053		0.056
DCap				0.134
DL	1.003	0.439		0.130
IC				

Source: SmartPLS 4

3. Multicollinearity

Table 14 shows the results of the Variance Inflation Factor (VIF) test. The VIF value is used to detect multicollinearity between independent variables, a condition in which the independent variables are closely related, which can influence the results of the regression analysis. Based on the table, the VIF values for the three independent variables range from 1.000 to 2.003. Generally, a VIF value below 10 indicates no serious multicollinearity problem. Therefore, these three variables are declared "No Multicollinearity," as stated in the description column. This means that the independent variables are used together in the model without excessive influence on each other, so the regression results can be considered accurate.

Table 14. Multicollinearity Test Result

		DC	DCap	DL
DC		2.003		0.056
DCap				0.134
DL	1.000	2.003		0.130

Source: SmartPLS 4

4. Model Fit

Table 15 displays the results of the SRMR (Standardized Root Mean Square Residual) and NFI (Normed Fit Index). The SRMR value for the Saturated model is 0.084, and the Estimated model also has an SRMR value of 0.084. SRMR is a measure of the average difference between observed and predicted correlations. A lower SRMR value, generally below 0.08, indicates a better fit between the model and the data. The NFI value for the Saturated model is 0.763, and the Estimated model also has an NFI value of 0.763. The similarity between the two models indicates that the Estimated model provides a good fit to the data.

Table 15. Model Fit Test Result

	Saturated Model	Estimated Model
SRMR	0.076	0.076
NFI	0.801	0.801

Source: SEM-PLS

5. Goodness of Fit

In this study, the Goodness of Fit test was used. The results of the Goodness of Fit (GoF) calculation obtained a result of 0.143, which shows that the model used in this study has a fairly good level of fit to the data tested.

6. Path Coefficients

The value of the path coefficient usually ranges from -1 to 1 (Hair et al., 2021). Values adjacent to 1 indicate a positive and strong relationship, while close to -1 indicates a negative and strong relationship

Table 16. Hasil Uji Path Coefficients

Construct	Original Sample	T Statistics	P Values
Digital Capabilities -> Innovation Capabilities	0.335	4.420	0.000
Digital Leadership -> Digital Capabilities	0.603	6.552	0.000
Digital Leadership -> Innovation Capabilities	0.360	3.702	0.000
Digital Leadership -> Digital Culture	0.708	11.587	0.000
Digital Culture -> Digital Capabilities	0.209	2.181	0.030
Digital Culture -> Innovation Capabilities	0.203	3.111	0.002

Source: SmartPLS 4

Based on the results of the path coefficient test in Table 16, the analysis of the relationship between the three independent variables and the dependent variable is presented. The original sample shows the strength of each independent variable's influence. The original sample's correlation coefficient (α) between digital capabilities and innovation capabilities was 0.335, indicating a positive relationship between the two variables. The original sample's correlation coefficient (α) between digital leadership and digital capabilities was 0.603, indicating a positive relationship between the two variables. The original sample's correlation coefficient (α) between digital leadership and innovation capabilities was 0.360, indicating a positive relationship between the two variables. The original sample's correlation coefficient (α) between digital leadership and digital culture was 0.708, indicating a positive relationship between the two variables. The original sample's correlation coefficient (α) between digital culture and digital capabilities was 0.209, indicating a positive relationship between the two variables. The original sample's correlation coefficient (α) between digital culture and innovation capabilities was 0.203, indicating a positive relationship between the two variables.

Hypothesis Testing

a. First Hypothesis

Based on the Bootstrapping test results in Table 16, digital capabilities have a T-statistic of 4.420 and a P-value of 0.000, meaning the T-statistic is greater than 1.96 and the P-value is less than 0.05. This demonstrates the validity and significance of the first hypothesis. With an original sample value of 0.335, it can be concluded that digital capabilities significantly and positively influence innovation capabilities.

b. Second Hypothesis

Based on the Bootstrapping test results in Table 16, digital leadership has a T-statistic of 6.552 and a P-value of 0.000, meaning the T-statistic is greater than 1.96 and the P-value is less than 0.05. This demonstrates the validity and significance of the second hypothesis. With an original sample value of 0.603, it can be concluded that digital leadership significantly and positively influences digital capabilities.

c. Third Hypothesis

Based on the Bootstrapping test results in Table 16, digital leadership has a T-statistic of 3.702 and a P-value of 0.000, meaning the T-statistic is greater than 1.96 and the P-value is less than 0.05. This demonstrates the validity and importance of the third hypothesis. With an original sample value of 0.360, it can be concluded that digital leadership significantly and positively influences innovation capabilities.

d. Fourth Hypothesis

Based on the Bootstrapping test results in Table 16, digital leadership has a T-statistic of 11.587 and a P-value of 0.000, meaning the T-statistic is greater than 1.96 and the P-value is less than 0.05. This demonstrates the validity and importance of the fourth hypothesis. With an original sample value of 0.708, it can be concluded that digital leadership significantly and positively influences digital culture.

f. Sixth Hypothesis

Based on the bootstrapping test results in Table 16, digital culture has a T-statistic of 3.111 and a P-value of 0.002, meaning the T-statistic is greater than 1.96 and the P-value is less than 0.05. This demonstrates the validity and significance of the fifth hypothesis. With an original sample value of 0.209, it can be concluded that digital culture significantly and positively influences innovation capabilities.

CONCLUSION

Digital Culture and Digital Leadership have a positive and significant influence on Innovation Capabilities, both directly and through Digital Capabilities as a mediating variable. Strong digital leadership and an adaptive digital culture drive the improvement of an organization's digital capabilities, ultimately strengthening the company's innovation capacity in facing competition in the Jakarta manufacturing industry

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